Right Hip Pain

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Case History: 13 year old male with 5 days of right hip pain. While playing basketball, he jumped over another player and landed awkwardly on his right leg. He reports being flexed at his hip when he landed and then felt a twisting motion with immediate pain. He was able to limp with pain after the injury. For the next 2 days, he limited his activity with improved symptoms. For the 2 days prior to presentation, reported decreasing pain symptoms and tolerated walking without increased discomfort. He continued to have severe sharp pain if he tried to run. He described the pain as a non-radiating 3/10 ache localizing to antero-lateral right hip on presentation.

PMHx: history of left AIIS apophysitis 2 years prior
PSHx: none
Meds/allergies: none
Family Hx: Mom and dad both healthy, no history of bone problems
Social Hx: Attends high school, gets good grades, denies any drug use/sexual activity
ROS: 10 system reviewed and negative except per HPI

Physical Exam:
In general, he was in no acute distress. While standing he held his right lower extremity in 10 degrees of external rotation. Focused lower extremity exam revealed discomfort with right hip flexion, adduction and internal rotation. Internal rotation was limited to 20 degrees and associated with sharp pain otherwise full passive range of motion. Strength was 4/5 for right iliospsoas and sartorius while rectus femoris was 5/5, and all were associated with discomfort while testing. No tenderness to palpation of ASIS, AIIS, greater trochanter, pubic symphysis, or along the spinous processes. Modified Schober test showed normal lumbar mobility. Straight leg raise was negative and neurovascularly intact in bilateral lower extremities.

Differential Diagnosis
1. SCFE
2. Apophyseal avulsion of ischial tuberosity, ASIS, or AIIS
3. Chondral lesion or labral tear
4. Adductor muscle strain
5. Trochanteric bursitis and Snapping hip syndrome
6. Avascular necrosis, Perthe’s
7. Pelvic or femoral fracture
8. Ligamentum teres rupture
9. Sports Hernia
10. Femoacetabular impingement (FAI)
11. Toxic synovitis or hip effusion
Imaging:
Frog leg and standing AP radiographs were obtained. No evidence of SCFE, but an atypical appearance of right acetabulum was concerning for fracture.

CT scan was then obtained to further evaluate the right hip. Axial cuts and 3-D reconstruction demonstrate the posterior wall fracture with 2mm of dorsal displacement.
Diagnosis: Posterior Wall Acetabular Fracture

Treatment: The patient was referred for urgent orthopedic evaluation under anesthesia to assess for signs of joint instability. During this examination, widening of the medial joint space during stress of the right hip was found. This was compared intra-operatively to the left that had no evidence of joint space widening. It was determined that this fracture had resulted in an unstable hip joint and required open reduction with internal fixation. During surgery, a large posterior wall fragment was found to be unstable and displaced. Post-operatively he was toe-touch weight-bearing for the next 2 months and has completed physical therapy with a pain free return to running and activity.
DISCUSSION:
This case illustrates the diagnostic and therapeutic challenges associated with acetabular fractures in young athletes. Patients may present several days after the injury, report no instability of the hip, and be able to bear weight after the injury. Acetabular fractures are classically associated with either a high energy injury mechanisms or bone predisposed to fracture secondary to osteopenia/osteoporosis (1,2,5). The classic injury mechanism is associated with motor vehicle accident or high velocity fall. Over the past several years, a few case reports of low-impact, non-contact injuries in otherwise healthy young adults have been described in the literature (6). This case report will add to previously reported cases.

A high clinical suspicion is needed to make this diagnosis. Diagnostic evaluation begins with plain radiographs. Frog leg view should be obtained to evaluate for SCFE and Judet (internal and external oblique) views are helpful in the evaluation of both acetabular columns and the walls (3). The Judet internal oblique view will best visualize a posterior wall fracture (8). Roof arc measurements on AP and Judet oblique radiographs can establish whether a fracture involves the weightbearing portion of the acetabulum and help to determine surgical indications in some fracture types. Posterior wall fractures are a unique type of acetabular fracture because roof arc measurements do not apply. Even with appropriate radiographs, the diagnosis can remain elusive. Further evaluation with CT helps determine indications for surgery, but ultimately examination under anesthesia and fluoroscopy may be needed for determine stability of the joint.

Indications for surgery (7):
-Hip Instability
-Defect of the posterior wall >50% (many defects 20-50% are unstable, and any size fracture which creates instability should be repaired as in first indication)
-Incarcerated osteochondral fragments
-Irreducible fracture dislocation
-Joint incongruity in the weightbearing portion of the acetabulum

The outcomes of acetabular fractures are felt to be related to the stability of the hip, concentricity of the head under the roof of the acetabulum and the condition of the roof itself (7). Children under the age of 12 are at risk for growth abnormalities of the acetabulum resulting in a shallow socket and progressive subluxation of the hip. Delayed reconstruction (21-120 days) of acetabular wall fractures have been found to be associated with increased difficulty of operative treatment, increased adverse outcomes, a significant reduction of “good” to “excellent” results and increased failure rates (4).

REFERENCES: